

What is claimed is:

1. A method of radio resource management comprising the steps of:

determining current network blocking rates for data and voice traffic;

5 in dependence upon predetermined target blocking rates, determine a network cost for the current blocking rates; and

adjustg partitioning of voice and data traffic to lower the network cost.

2. A method as claimed in claim 1 wherein the determining step determines the network cost for the current blocking rates periodically.

3. A method as claimed in claim 1 wherein the adjusting step adjusts partitioning of voice and data traffic iteratively.

4. A method as claimed in claim 1 wherein the determining step includes a step of evaluating the network cost written as:

$$Cost = W_v \times [f_v(T_v, T_d) - P_{Bv}^*]^P + W_d \times [f_d(T_v, T_d) - P_{Bd}^*]^P$$

where:

- T_v and T_d are maximum fractions of resource partitioning values for voice and data, respectively
- W_v and W_d are positive constants representing the relative weighing of voice vs. data
- $f_v(T_v, T_d)$ and $f_d(T_v, T_d)$ are the current estimated blocking rates for voice and data traffic, respectively

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- P_{Bv}^* and P_{Bd}^* are the target blocking rate for voice and data respectively
- P is a positive number
- The function $[x]$ is equal to x for positive x and is equal to 0 for nonpositive x

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5. A method as claimed in claim 4 further comprising a step of determining based on the value of the evaluated network cost if partitions of voice and data are updated.

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6. A method of radio resource arrangement comprising the step of:

determining power requirement for a data burst to be transmitted at a plurality of transmission rates; and

transmitting a data burst in dependence upon its data rate having a higher rate and its relative power requirement being lower than other data bursts.

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7. A method as claimed in claim 6 wherein the determining step determines power requirement based on data burst requests.

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8. A method as claimed in claim 6 further comprising a step of determining if there are data burst requests to be examined in order to determine power requirement.

9. A method as claimed in claim 6 wherein a data burst is chosen to be served based on a comparative decision amongst currently contending data burst users.

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10. A method as claimed in claim 7 further comprising a step of storing the data burst requests in queues in dependence upon priority levels.

5 11. A method as claimed in claim 10 further comprising a step of sorting queues such data the queue that can be served at maximum rate with minimum power requirement is given the highest priority.

10 12. A method of radio resource management comprising the step of: equalizing channel interference in a wireless network by equalizing the rate of information transmitted by different users.

13. A method as claimed in claim 12 wherein the determining step determines the burst duration based on assigned burst rate and minimum burst duration.

15 14. A method of radio resource management comprising the step of: data burst rates pool size is determined by the interference experienced by active users.

15. A method as claimed in claim 14 wherein network interference is measured and reported to the controller.

20 16. A method as claimed in claim 14 wherein high burst rate elements of the pool are excluded in the burst rate assignment when channel interference is high.

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17. A method as claimed in claim 14 further comprising a step of expanding the pool of burst rate size to include high burst rates, when channel interference is low.

18. A method of radio resource management comprising the step of: burst rate is determined based on traffic delay constraint.

19. A method as claimed in claim 18 wherein lowest burst rate is determined to satisfy traffic delay constraint.

20. A method as claimed in claim 18 wherein traffic delay is measured and reported to the controller.

21. A method of radio resource management comprising the step of determining if an emergency burst transmission can be granted whereby power is borrowed.

22. A method as claimed in claim 21 wherein the determining step determines if an emergency burst can be granted given the time since the last emergency burst and if the data user has been prevented from obtaining burst channels.

23. A method as claimed in claim 22 wherein the determining step calculates the power available from other users and the power required by the waiting data user for a burst and determines if sufficient power is available to meet the data user's burst requirements.

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24. A method as claimed in claim 21 further comprising the step of calculating the power required by the waiting data user for other burst rates if the first burst rate selected cannot be granted and comparing this requirement with the power available from other users and determining if sufficient power is available to meet the data user's burst requirements.

25. A method as claimed in claim 21 further comprising the step of temporarily reassigning emergency burst has been sent to the waiting data user's burst channel for a predetermined time and then returning power to the other users once the emergency burst has been sent.

26. A method as claimed in claim 21 further comprising the step of temporarily reassigning the power from sufficient other users to the waiting data user's burst channel for a predetermined quantity of data and then returning power to the other users once the emergency burst has been sent.